

# HG1 No Clean Solderpaste

**Easily cleaned flux residues**  
**Excellent print transfer properties**  
**SAC 305 (Sn96.5/Ag3.0/Cu0.5)**

## DESCRIPTION

**HG1** is a no-clean solder paste, however the flux residues can be easily removed when assemblies need to be cleaned to meet customer requirements

**HG1** gives excellent print transfer efficiencies on 01005 components, with trouble free printing down to 0.2 mil with T4 powder.

**HG1** has been found to produce low voiding: <5% on BGAs and <10% on BTC components.

## BENEFITS

- Doesn't require refrigeration (3 months shelf life at < 25°C)
- Eliminates 'Head In Pillow' defects
- Easily cleanable in Zestron cleaners
- Superior wetting and spreading characteristics
- Reduces or eliminates voiding, particularly under BGAs
- High resistance to slumping
- High humidity resistance
- High resistance to solder balling
- Extended stencil life

## Typical specifications and test results

	Specification
Alloy	96.5Sn, 3.0Ag, 0.5Cu
Flux type and content	11.8% RMA
Particle size	T4 20-38 Micron T5 10-25 Micron
Alloy melting temp	216-221°C
Viscosity	500-1000Kcps
Acid Value	136mgKOH/g of flux
Oxygen Bomb Halogen Test	Bromine 265mg/Kg Chlorine<122mg/Kg
Bono Testing	Pass Fc <8.0 Typical
Silver Chromate Test	No discolouration
Insulation resistance	IPC-TM-650 2.6.3.7 Pass
Electromigration	IPC-TM-650 2.6.14.1 Pass
J-STD-004	ROLO

## APPLICATION

If the product has been refrigerated allow to warm up to room temperature (at least 8 hours) if using for the first time. Stir with a spatula for at least 30 seconds to ensure homogenisation of paste. Apply sufficient paste to stencil to allow a smooth even roll.

A bead diameter of 1/2 to 5/8 inch is normally sufficient. Squeegees should be set at 60° for highest print definition. Pressure should be around about 0.28-0.33Kg/sq cm, print speed 20-150mm/sec with 0.0mm snap-off distance (on contact).

Do not store new and used paste in the same container. Once a pot of paste has been opened, replace the internal plug, re-seal and store in a cool place out of direct sunlight. Do not return to fridge Paste that has not been opened may be kept in a refrigerator for at least 12 months.

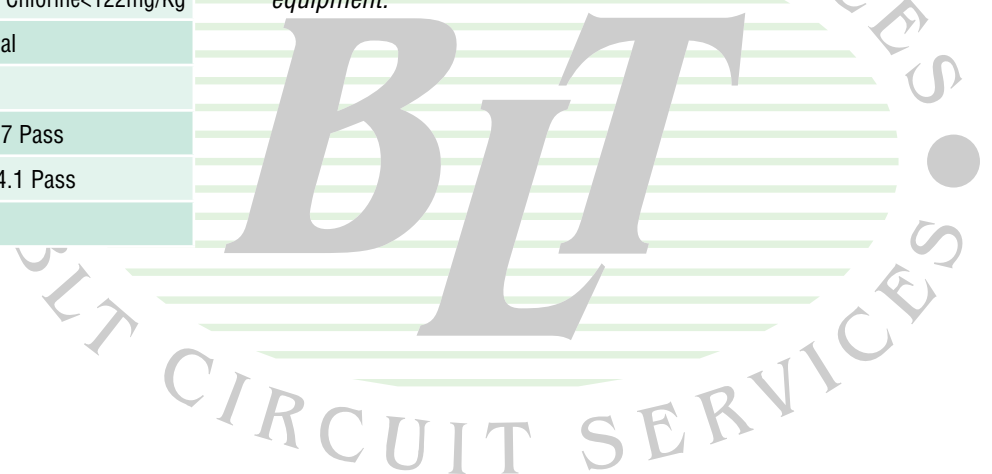
## REFLOW

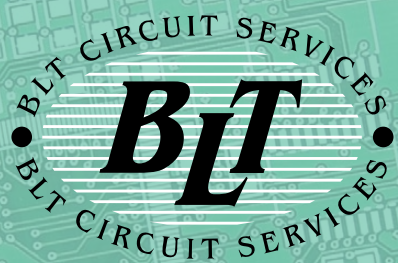
The HG1 paste can be reflowed using any of the two most commonly used profile types i.e RSS (Ramp-Soak-Spike) and RTS (Ramp-To-Spike). Please refer to Reflow Profile on page 2.

## EQUIPMENT AND CIRCUIT CLEANING

BLT manufactures a range of aqueous and solvent cleaning equipment for stencils and misprinted boards. SCS/1 and SCS/2M are particularly recommended for the removal of **HG1** paste.

**HG1** can be efficiently removed using the Vigon range of cleaning chemicals from Zestron. The A201, A250, N640 and N680 are particularly effective in both spray and ultrasonic equipment.



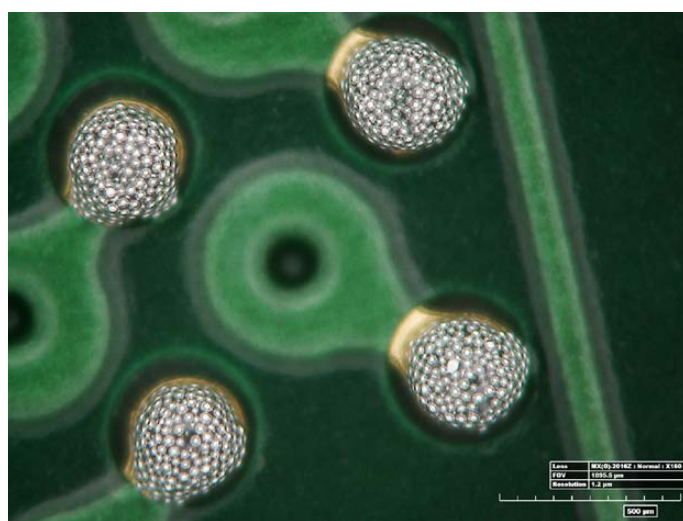
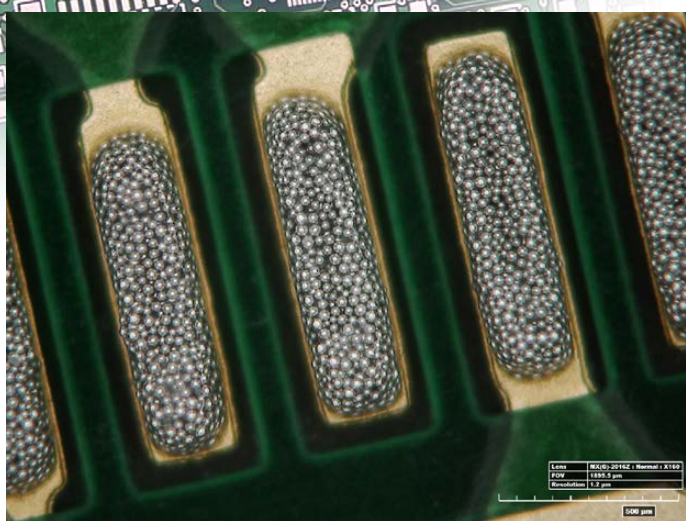


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## SUPPORT DATA & TEST RESULTS

### Printability



*Type 4 Solder Spheres 20-38 microns giving excellent printing definition.*

### Recommended Reflow Profile

*Typical Profile length 3-4.5 minutes*

*Initial heating rate 1-4°C*

*Soak time from 150-180°C 60-90 secs or 60-120 seconds if using a faster initial heating rate to 170°C Ramp*

*From 180°C to peak 2-3°C per second*

*Time above 220° C 30-90 seconds*

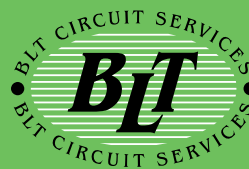
*Peak temp 240-260°C\* \*To accommodate higher peak component profiles e.g. some BGAs and LEDs*

*Cool down 2-5°C per second*

*Please find two examples of a typical RSS and RTS with the HG1 paste on the following 2 pages.*

### Warranty

*All reasonable endeavours have been made to ensure that the information contained in this data sheet is accurate, but it is submitted on the express condition that BLT Circuit Services Ltd. shall be under no liability whatsoever in respect thereof or for any loss, injury, damage or liability of whatsoever nature arising, suffered or incurred as a consequence of its use.*



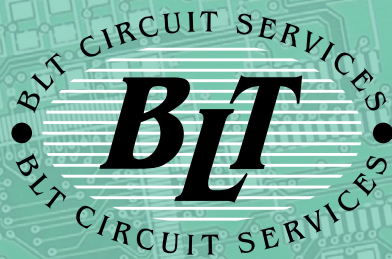
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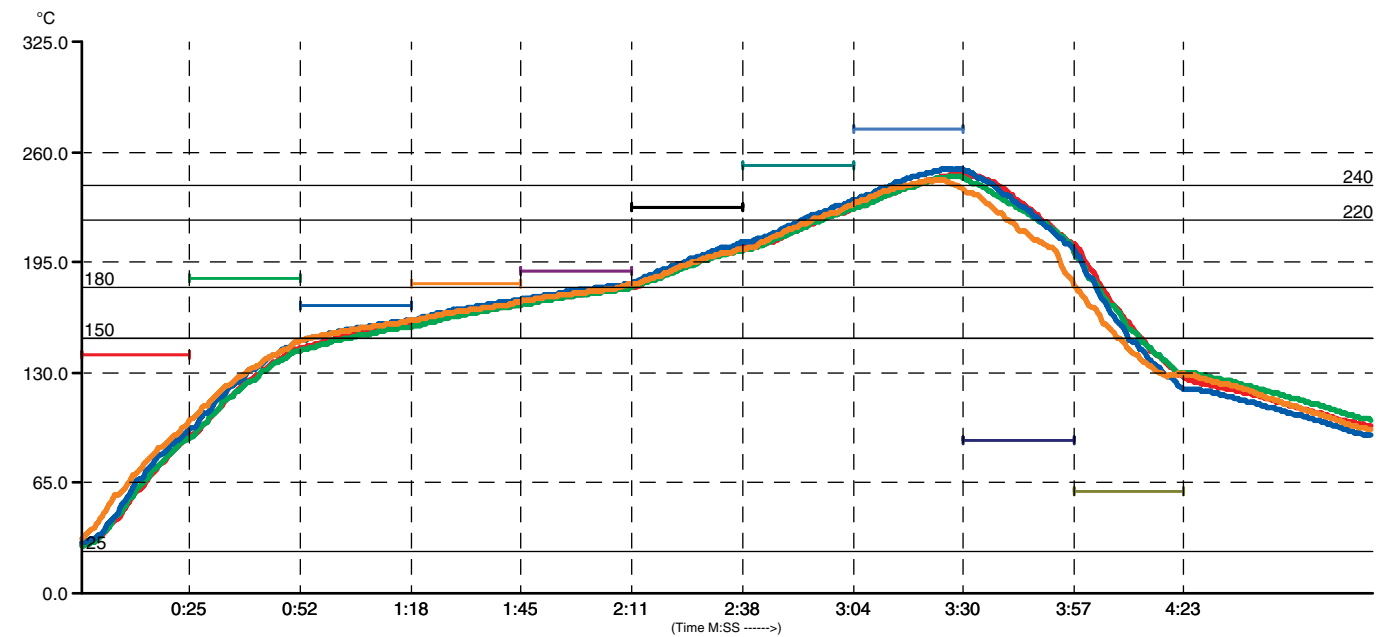
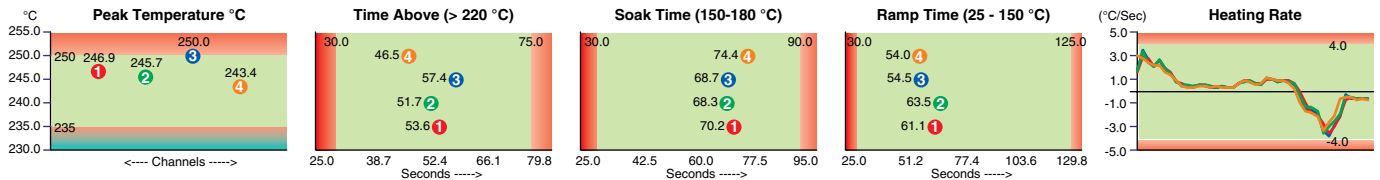
**Web** www.bltcircuitservices.co.uk



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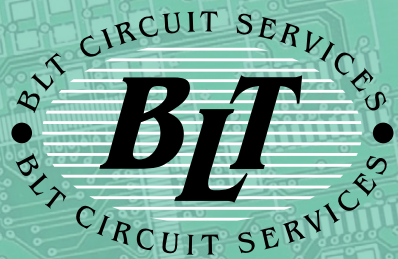
## RAMP SOAK SPIKE DATA



Process Parameters		
Solder Type: BLT HG1 Solderpaste		
	Min	Max
Soak Time (150-180°C)	30 seconds	90 seconds
Time Above (t>220°C)	30 seconds	90 seconds
Peak Temperature	240°C	260°C

Zone Setpoints (Machine: : Soltec quantis) Recipe: Ramp Soak Spike										
95.00 cm/min (N2)	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	10
Top Heater (°C)	140	186	170	182	190	227	252	273	90	60
Bottom Heater (°C)	140	186	170	182	190	227	252	273	90	60

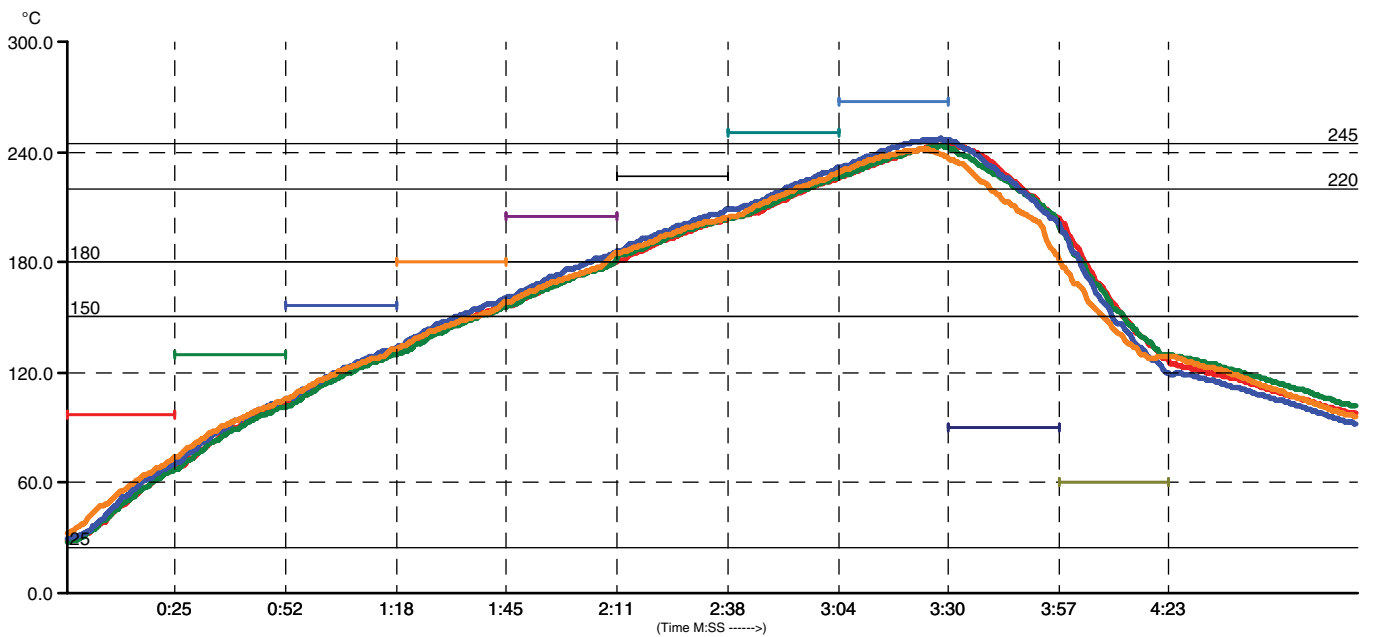
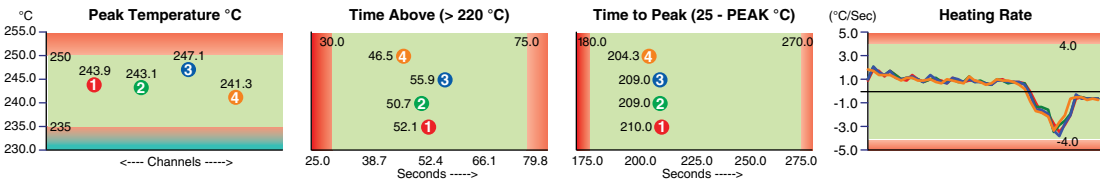
Channel	Process Data									Zone Slopes (°C/Sec)											
	Peak	25-150	t=150	t=180	150-180	t=220	t>220	t>240	t=Peak	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	Max+	Max-
1	246.9	61.1	61.1	131.3	70.2	176.8	53.6	20.0	3:29.0	2.9	2.2	0.5	0.5	0.3	1.0	1.0	0.9	-2.1	-3.7	2.9	-3.7
2	245.7	63.5	63.5	131.8	68.3	177.8	51.7	15.0	3:29.0	3.3	2.4	0.6	0.5	0.5	0.9	1.0	0.9	-2.7	-3.7	3.3	-3.7
3	250.0	54.5	54.5	123.2	68.7	172.1	57.4	25.0	3:29.0	3.5	2.5	0.5	0.5	0.5	1.0	1.1	0.9	-2.5	-4.2	3.5	-4.2
4	243.4	54.0	54.0	128.5	74.4	175.4	46.5	11.0	3:24.6	3.0	2.2	0.5	0.4	0.6	0.9	1.0	-1.0	-3.8	-3.1	3.0	-3.8
Delta	6.6	9.5	9.5	8.6	6.1	5.7	10.9	14.0	14.0	0.6	0.3	0.1	0.1	0.3	0.1	0.1	1.9	1.7	1.1	0.6	0.5
Mean	246.50	58.27	58.27	128.70	70.40	175.53	52.30	17.75	17.75	3.17	2.33	0.53	0.47	0.47	0.95	1.02	0.43	-2.78	-3.68	3.17	-3.85



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## RAMP TO SPIKE DATA



Process Parameters		
Solder Type: BLT HG1 Solderpaste		
	Min	Max
Soak Time (150-180°C)	40 seconds	90 seconds
Time Above (t>220°C)	30 seconds	90 seconds
Peak Temperature	240°C	260°C

Zone Setpoints (Machine: : Soltec quantis) Recipe: Ramp To Spike										
95.00 cm/min (N2)	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	10
Top Heater (°C)	97	130	156	180	205	227	250	267	90	60
Bottom Heater (°C)	97	130	156	180	205	227	250	267	90	60

Channel	Process Data									Zone Slopes (°C/Sec)											
	Peak	25-150	t=150	t=180	150-180	t=220	t>220	t>245	t=Peak	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	Max+	Max-
1	243.9	210.0	97.2	131.3	34.1	177.3	52.1	0.0	3:29.0	1.8	1.5	1.1	1.0	0.9	1.0	1.0	0.8	-2.1	-3.6	1.8	-3.6
2	243.1	209.0	98.6	131.3	32.7	177.3	50.7	0.0	3:29.0	2.0	1.6	1.2	1.2	1.2	1.0	0.9	0.8	-2.7	-3.6	2.0	-3.6
3	247.1	209.0	92.9	125.1	2.2	172.1	55.9	10.0	3:29.0	2.1	1.7	1.2	1.2	1.0	1.0	1.0	0.8	-2.4	-4.1	2.1	-4.1
4	241.3	204.3	97.2	129.4	32.2	174.9	46.5	0.0	3:24.6	1.8	1.5	1.2	1.0	1.3	0.8	0.9	-0.9	-3.8	-3.1	1.8	-3.8
Delta	5.8	5.7	5.7	6.2	1.9	5.2	9.4	10.0	0.0	0.3	0.2	0.1	0.2	0.4	0.2	0.1	1.7	1.7	1.0	0.3	0.5
Mean	243.85	208.07	96.48	129.28	32.80	175.40	51.30	2.50	0.00	1.93	1.58	1.18	1.10	1.10	0.95	0.95	0.38	-2.75	-3.60	1.93	-3.78